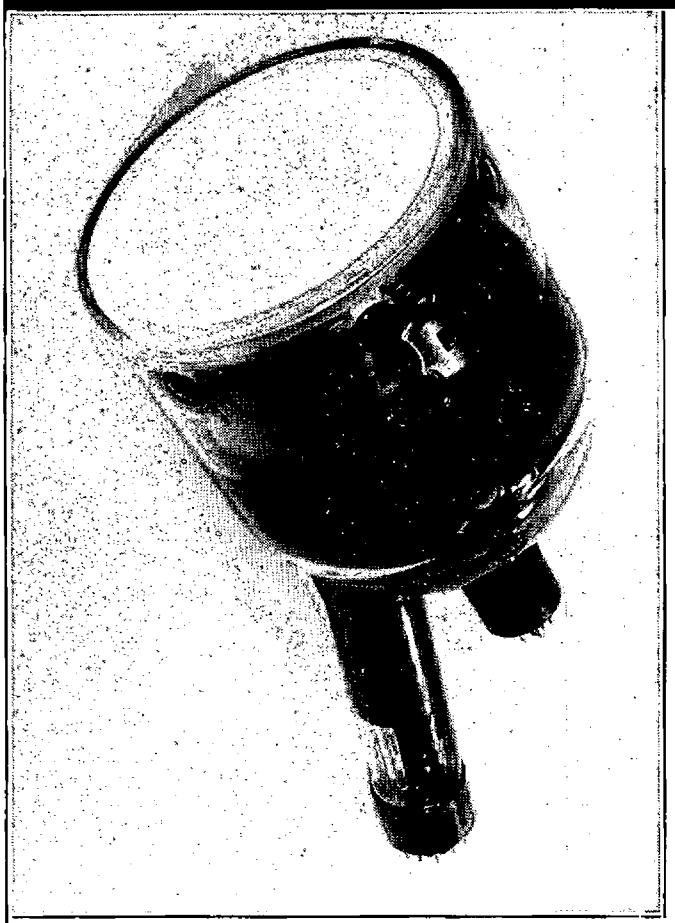
PRODUCT DATA SHEET



TYPE V T P 6990

5" TONE DISPLAY STORAGE TUBE

The VTP 6990 is a storage type cathode ray tube designed to present bright visual displays of television, radar or other types of electronically written information. Special features of this tube are its ability to display tones and to write, hold and erase at the operator's option. Brightness is sufficiently high for easy viewing in bright daylight, and writing and erasure speeds are fast enough to present excellent displays of high speed data with good contrast.

The VTP 6990 contains a storage structure mounted internally near the panel, a flood gun or viewing gun mounted axially at the rear of the tube, and an electrostatically focused and deflected writing gun protuding downward at an angle of approximately 15° at the rear and below the flood gun.

DATA

General	Writing Gun	Viewing Gun
Heater—Unipotential Cathode		
Voltage AC or DC	6.3	6.3 volts
Current	0.6	0.6 Amp
Focus Method	Electrostatic	Electrostatic
Deflection Method	Electrostatic	None
Phosphor — Aluminized — As specified	Standard P20	
Minimum useful screen diameter	4 inches	
Maximum overall length	12¼ inches	
Maximum tube radius	4½ inches	
Maximum bulb diameter	5-5/16 inches	
Bases	12 pin Duo Decal	9 pin Miniature
Bulb Terminals	Recessed small ball caps (6) J1-22	
Mounting Position	Any	

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May 1957 Rev 0

from JETEC release #1954, June 24, 1957

TYPE V T P 6990

MAXIMUM RATINGS—All voltages are referenced to Viewing Gun cathode unless otherwise specified.

	Writing Gun	Viewing Gun
Screen Voltage		12,000 Max Volts
Storage Mesh (Peak)		25 Max Volts
Collector Mesh		500 Max Volts
Collimating Cylinder		500 Max Volts
Anode	+100	500 Max Volts
Cathode	−2500	500 Max Volts
Grid #1 Voltage (Reference to Cathode)		
Negative bias value	200	200 Max Volts
Positive bias value	0	0 Max Volts
Positive Peak value	2	0 Max Volts
Peak voltage between reference and any deflecting electrode	500	Max Volts
Maximum resistance in deflecting electrode circuit	5.0 meg	Max Ohms
Peak Heater — Cathode Voltage		
Heater negative reference cathode	125	125 max volts
Heater positive reference cathode	125	125 max volts
Grid Control		
Cutoff (Reference to cathode)	−20 to −70	−30 to−100 volts

TYPICAL OPERATION — Suggested values

Screen Voltage		8,000 volts
Storage Mesh		0* volts
Storage Mesh Series resistance		5 K ohms
Collector Mesh		200 volts
Collector Mesh Series resistance		None
Collimating Cylinder		120 (Adj) volts
Collimating Cylinder Series Resistance		None
Anode	0 to +20(Adj)	185 (Adj) volts
Cathode	−1400	0 volts
Grid #1 (Reference to Cathode)	−20 to −30(Adj)	−30 to −50 volts
Deflection D1 - D2	37 to 57 v/in	
Detlection D3 - D4	28 to 48 v/in	
Focus	−1100 (Adj)	volts

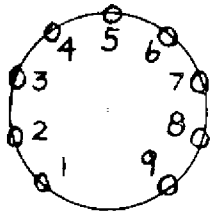
* **Note:** Zero volts is the black storage condition. Normal usage is to increase storage mesh positive approximately 20 volts to erase, then reduce to approx imately zero volts, placing screen in the unwritten condition. Application of the writing gun beam will now present a display on the screen which will be stored. This display may be erased by repeating above procedure.

Pulse erasure: Pulse erasure may be accomplished by the application of pulses of +10 to +25 volts with a pulse width of 1 to 10 microseconds and a repetition rate of 400 to 3000pps. For this application the storage mesh receives the pulse through an .01 mfd capacitor. The storage mesh is tied to ground by means of a 5 K resistor.

Displays of variable or selectable persistence may be presented by varying the pulse erasure in either pulse width or repetition rate, and applying this erasure continuously during writing. Persistence may be varied from about 1 second to several minutes.

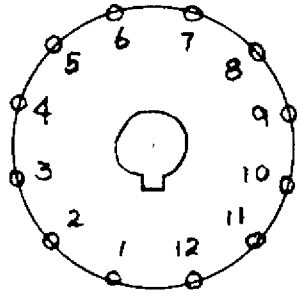
VTP 6990

5" TWO NECKED TONE STORAGE TUBE BASE PIN CONNECTIONS



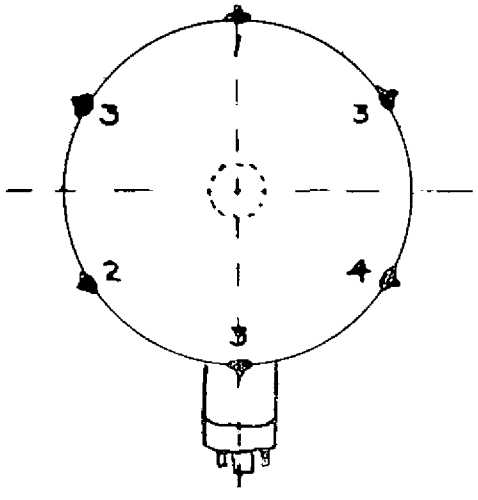
Viewing Gun Bottom View

Pin#	Element
1	Heater
2	No Connection
3	Grid #1
4	Cathode
5	No Connection
6	Anode (Grid #2)
7	No Connection
8	Grid #1
9	Heater

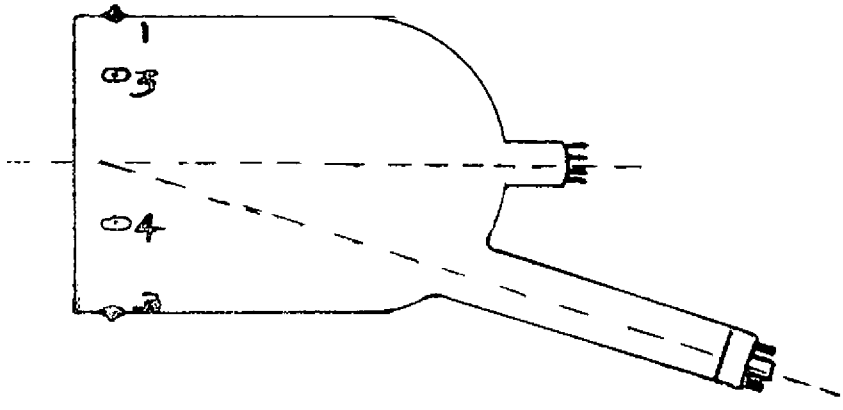


Writing Gun Bottom View

Pin#	Element
1	Heater
2	Grid #1
3	No Connection
4	Focus
5	Deflection #1
6	Deflection #3
7	Anode
8	Deflection #4
9	Deflection #3
10	No Connection
11	Cathode
12	Heater



Panel View — Neck Down



Side View

Note: Terminal 4 (H.V.) is 120° clockwise from top of bulb viewing panel.

Bulb Terminal Connections:

Viewing bulb from panel end, Terminal 1 is at top of bulb, Terminal 3 is 60° clockwise , Terminal 4 is 120° clockwise, Terminal 3 is at bottom or 180° clockwise, Terminal 2 is 240° clockwise, and Terminal 3 is 300° clockwise. Note: All three Terminal 3 connections are internally connected.

Terminals	Electrode
1	Storage Mesh
2	Collector Mesh
3	Collimating Cylinder
4	Screen H. V.

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VTP 6990

Note 1. Internal conductive Aquadag coating and pin #7 of the writing gun are internally connected.

2. With positive voltage on deflection plate D1, beam is deflected between bulb terminals #3 and #2, (90° to terminal #1) and approximately towards writing gun pin #5.

3. With positive voltage on deflection plate D3, beam is deflected towards bulb terminal #1, and approximately towards writing gun pin #2.